

HAZARDOUS WASTE DETERMINATION FORM

Hazardous Waste Determination Form #:

A. WASTE DESCRIPTION: Acrylic acid

Generation Process:

Residual acrylic acid product is assumed to be good/valuable and is pumped into totes. If, however, the product in totes is determined to be contaminated or unusable, it subsequently disposed as u-listed hazardous waste (U008).

Generation Location:

Tubal-Cain Gas Free Services

Total Quantity and/or Estimated Generation Rate:

0-2000 gallons per month

B. WASTE PROPERTIES, CHARACTERISTICS, and CONSTITUENTS:

Physical State:

- ☐ Solid
☐ Solid w/freestanding or absorbed liquid
☒ Liquid (If liquid, indicate if the liquid is:
 ☒ Single-Layer
 ☐ Multi-Layer
☐ Gas

pH:

- ☒ ≤ 2
☐ > 2 but < 12.5
☐ N/A ☐ ≥ 12.5

Flashpoint:

- ☒ < 140 °F
☐ > 140°F but < 200 °F
☐ N/A ☐ > 200 °F

Characteristics:

- ☒ Corrosive
☒ Ignitable
☐ Reactive
☐ Radioactive
☐ Toxic
☐ None

PCB Content:

- ☐ > 5 ppm
☐ < 5 ppm
☒ None

Listed:

- ☒ P or U-list (DCC only**)
☐ K-list
☐ F-list ☐ N/A
**DCC – discarded commercial chemical products

Metal Content:

- | | | | |
|-------------------------------------|-----------------------------------|--------------------------------------|--|
| <input type="checkbox"/> Antimony* | <input type="checkbox"/> Chromium | <input type="checkbox"/> Molybdenum* | <input type="checkbox"/> Vanadium* |
| <input type="checkbox"/> Arsenic | <input type="checkbox"/> Cobalt* | <input type="checkbox"/> Nickel* | <input type="checkbox"/> Zinc* |
| <input type="checkbox"/> Barium | <input type="checkbox"/> Copper* | <input type="checkbox"/> Selenium | |
| <input type="checkbox"/> Beryllium* | <input type="checkbox"/> Lead | <input type="checkbox"/> Silver | <input checked="" type="checkbox"/> None |
| <input type="checkbox"/> Cadmium | <input type="checkbox"/> Mercury | <input type="checkbox"/> Thallium* | |

*Check these metals (or metal compounds) only if they are in a friable, powdered, or finely divided state.

Composition (list all hazardous constituents): Acrylic acid

Constituent:	Volume % (range):	Constituent:	Volume % (range):
Acrylic acid	95 - 99.5 %		

C. REMARKS (Attach all applicable documentation describing the waste (e.g. process knowledge statement, MSDS, sample analysis, etc.):

Acrylic acid-SDS, Analytical, Process knowledge statment

D. FINAL DETERMINATION:

- ☒ Hazardous ☐ Non-hazardous ☐ Medical Waste ☐ Universal Waste ☐ Used Oil ☐ Prohibited by POTW

COMPLETED BY:

Kenny Trahan

DEPARTMENT:

Manager of Environmental Operations

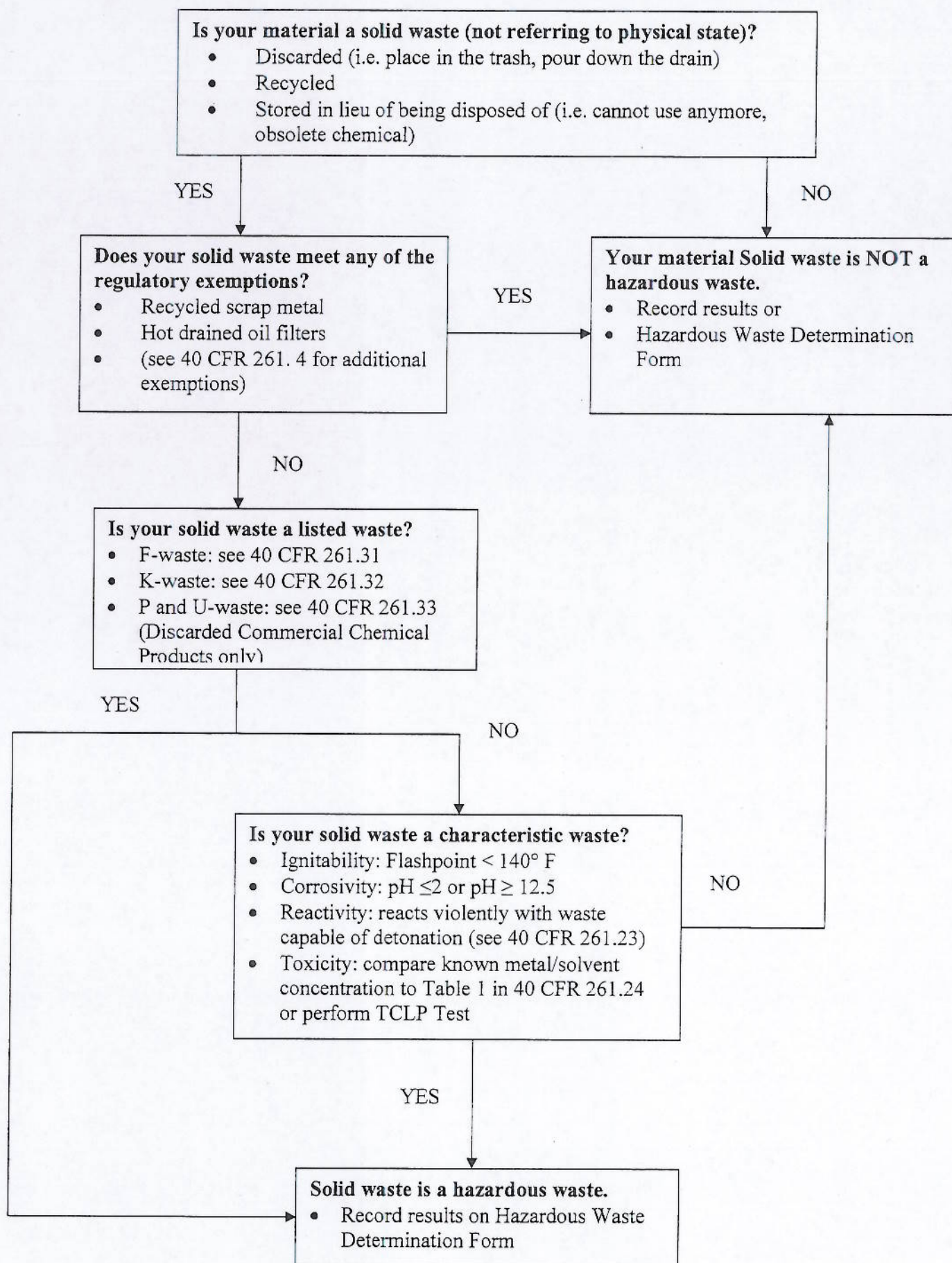
CONTACT No.:

409-960-8025

DATE:

5/11/2015

FIGURE 1: HAZARDOUS WASTE DETERMINATION FLOW CHART



Generator Knowledge Documentation

Generator: Tubal Cain Gas Free Services

Facility EPA ID#: TXR000080426 State ID#: 90733

Waste Name: Acrylic Acid and Acrylic acid wash water

Detailed Description of Waste Generation Process:

Upon arrival at tubal Cain, residual acrylic acid barge product is assumed to be good/valuable product and is pumped into totes. If, however, the product in totes is determined to be contaminated or unusable, it subsequently disposed as u-listed hazardous waste. When uncontaminated however, this material is valuable product and the containerized totes are subsequently sold and used as product. Consequently, this product is excluded from the definition of a solid waste (it is not discarded as per 40 cfr 261.2(a)(2). Once the product has been removed and the barge is rcra empty, it is washed. The waste water is a new waste stream with point of origination as it exits the barge and into a temporary storage container. This material is now a waste but not a u-listed waste (both because the U-code does not apply because this waste stream does not meet the the definition of a discarded commercial chemical product per 40 cfr 261.33 and because the barge was rcra empty as per 40cfr 261.33(c) and 40 Crf 261.7(b)(1)(iii)(B). This waste is not a characteristically hazardous waste stream for ignitability per 40 Crf 261.21 (a)). This waste stream, however, still exhibits the D002 characteristic. The temporary storage tank used to store and neutralize this wastewater meets the definition of an Elementary neutralization unit per 40 cfr 260.1. Epa excludes elementary neutralization units from generator hazardous waste treatment unit permitting requirements as per 40 cfr 264.1(g)(6). Consequently, this tank does not require rcra permitting. In addition, As per 40cfr 261.3(g)(1), The Resultant wastewater is non-hazardous and not subject to regulation under rcra. This non rcra wash water is kept segregated in this temporary storage and neutralization tank and sent to Newpark environmental for off-site disposal as non-hazardous waste.

only
for D002
not D001

Acrylic Acid

Tubal Cain - ~~Acid~~

TRADEBE TREATMENT AND RECYCLING, LLC

Profile #

TRADEBE

GENERATOR WASTE STREAM PROFILE SHEET

Fax or email completed profile sheet to:

TTR Fax: 219-397-6411

UIS Fax: 203-238-6744

Process Code

usa.approvals@tradebe.com

A. GENERATOR INFORMATION:

MAILING OR SITE ADDRESS

USE CONTINUATION IF SITE & MAILING ADDRESSES ARE DIFFERENT

Generator #:

Generator Name: Tubal CainGenerator Address: 8700 Old Yacht Club RdCity: Port Arthur State: TX Zip: 77642Contact Name: Cade DurioGenerator Phone: 409-960-9273

Generator Fax:

Generator Email: cade@tcmarine-services.comGenerator USEPA/Federal ID #: TXR000080426

If no ID number is the Generator a "Conditionally Exempt Small Quantity Generator?"

Yes ☐ No ☐Generator SIC (or NAIC) Code: 488320

Generator State ID # (if applicable):

90733

Please check if generator has "No Canada Disposal" policy

Yes ☐ No ☒

Please check if generator has "No Landfill" policy

Yes ☐ No ☒

CUSTOMER INFORMATION:

Customer #:

Customer Name: GB Sales and ConsultingCustomer Address: 14303 HarborsideCity: Houston State: TX Zip: 77044Contact Name: Greg BowmanCustomer Phone: 713-419-6076

Customer Fax:

Customer Email: gallenb1963@gmail.comCustomer Service/Sales Rep: Cargle / Hurst

B. WASTE STREAM INFORMATION:

Generator's Waste Name: Acrylic Acid HeelOriginal Process Generating Waste: Waste - Acrylic acid removed from transport vessel

Is this waste exempt from RCRA regulation?

Yes ☐ No ☒

If "yes" explain or cite regulation on continuation (Example HHW, CESQG):

Current method of disposal:

Haz waste disposal

Is this waste from a CERCLA cleanup site?

Yes ☐ No ☒Waste determination was made by: ☐ Testing ☒ Generator Knowledge ☐ MSDS ☐ Sample ☐ Other

(Attach analytical, MSDS, or other supporting documentation used for waste determination)

Does the Waste have any of the following characteristics?

Yes (if yes check all that apply)

No

☐ Oxidizer☐ Dioxin or Suspect☐ Water Reactive☐ Air Reactive☐ Organic Peroxide☐ Hexachrome☐ Infectious Waste☐ Radioactive☐ Chelating Agent☐ Lachrymator☐ Explosive☐ Shock Sensitive☐ Polymerizer☐ Pyrophoric☐ Inhalation Hazard, Zone

C. GENERAL CHARACTERISTICS:

Color: Brown/bk

Physical state @ 70 F

Phases

BTU/lb

pH

Odor:

98 % liquid

☐ aerosol☒ single layer

<3000 (Ex: water)

<2 (Acid)

10.0-12.5

☐ None

% solid

☐ powder☐ double layer

3,000-5,000

2.0-4.0

>12.5 (Base)

☐ Mild

2 % sludge

☐ other

>2 layers

☒ 5,000-10,000

4.0-10.0

☒ Strong

% debris

how many?

>10,000 (Ex: oil)

Liquid Flashpoint:

<73 F

73 to 99 F

☒ 100 to 139 F

140 to 200 F

>200 F

None

Boiling Point 286 FSpecific Gravity: 1.05Total Halogens: 0.05 %Total Organic Carbon (TOC): 0.05 %

Viscosity:

D. CHEMICAL COMPOSITION: Total of Maximum concentration must be > or = to 100%.

Constituents

Min%

Max%

ppm

Constituents

Min%

Max%

ppm

See attached

Stabilized Acrylic Acid99 %Dioxin0.05 %Water0.05 %

Does the Waste contain any of the following?

Metal Pieces:

Yes ☐ No ☒

If yes, Describe Metal:

Nitrocellulose:

Yes ☐ No ☒

Metal Powder or Flake:

Yes ☐ No ☒

Sharps:

Yes ☐ No ☒

Isocyanates:

Yes ☐ No ☒

Asbestos: (If yes, must be double bagged and wetted)

Yes ☐ No ☒

Reactive cyanide: (If yes, indicate level in ppm)

Yes ☐ No ☒

Range of reactive cyanide

Reactive sulfide: (If yes, indicate level in ppm)

Yes ☐ No ☒

Range of reactive sulfide

PCBs: ☒ None

0-49 ppm

50-499 ppm

500+ ppm

(If waste contains PCBs, certification form is required)

Does the waste contain Benzene?

Yes ☐ No ☒

If yes, check all SIC codes that cover operations at your facility

Yes ☐ No ☒

2812 2813 2816 2819 2821 2822 2823 2824 2833 2834 2835 2836 2841 2842 2843 2844 2851 2851

2865 2869 2873 2874 2875 2879 2891 2892 2893 2896 2899 2911 2999 3312 4953 4959 9511

If waste contains benzene and falls under one of the above SIC codes, Tradebe's benzene NESHAP form is required for each shipment

WASTE WATER ANALYSIS

For waste streams being managed through United's wastewater treatment operations only:

Profile #

Phases: Oil _____ % Water _____ % Interface _____ % Sediments _____ % DNAPL _____ %								
Petroleum Phase	Suspected Level	Actual Level	Aqueous Phase	Suspected Level	Actual Level	Aqueous Phase	Suspected Level	Actual Level
PCB		0	Copper		0	Cobalt		
Halogens			Cadmium			Mercury	0	
Solvents			Chromium			Arsenic		
Arsenic			Lead			Barium		
Cadmium			Nickel			Sulfides		
Chromium			Silver			Cyanides		
Lead			Zinc			Phenols		
			COD			Glycols		
			Iron			Selenium		

List Specific Solvents:

E. OTHER WASTE STREAM INFORMATION:

Is this waste a USED OIL per 40CFR PART 279?

If Yes, does the total halogen content exceed 1,000 ppm?

If Yes, can you identify the Chlorinated Constituent present in the oil?

If Yes, can you rebut the presumption that this material is a Hazardous Waste?

Is the Waste subject to RCRA 40 CFR Subpart CC controls (Are Volatile Organic Compounds >500ppmw)?

Does the Waste contain any Class I or Class II ozone-depleting substances?

Does waste contain EPCRA 313 chemicals identified in 40 CFR 372.65?

If yes list in Additional Information on Continuation Page.

Does this waste contain any Chemicals of Interest listed in 6 CFR Part 27 Appendix A (Department of Homeland Security)? If yes please list in Additional Information on Continuation Page.

Yes ☒ NoYes ☐ NoYes ☐ NoYes ☒ NoYes ☒ NoYes ☒ NoYes ☒ NoYes ☒ NoYes ☒ NoYes ☒ No**F. RCRA CHARACTERIZATION:**

Is this a USEPA Hazardous Waste as defined in 40 CFR 261.3?

Is this a Universal Waste per 40 CFR part 273?

Please list any characteristic codes (D001-D043): D001, D002

x Yes ☐ NoYes ☒ No

Does the waste contain UHCs above treatment standards levels? (40 CFR 268.48, 268.7)

If yes identify those chemicals in Appendix I - Underlying Hazardous Constituents

Please list any applicable "F" or "K" codes:

Please list any applicable "U" or "P" codes: U008

Please list any state regulated codes:

Yes ☐ No**G. SHIPPING VOLUME & FREQUENCY:**

Bulk Liquid (tanker) _____ Approximately how many gallons?

Cubic Yard Boxes ☒ Totes 275 size in gallons _____ Metal _____ Plastic

Skid _____ Other _____ If other, please describe:

Drums (Specify size) 85 55 30 15 5 Metal _____ Plastic _____ Fiberboard

Is waste a combination package (e.g. Drum with inner containers or skid with cases of consumer products)?

Shipping Frequency: Number of Units _____ Per _____ Month _____ Quarter _____ Year _____ Other infrequent

Yes ☐ NoYes ☐ No**H. DOT SHIPPING INFORMATION**

Is this a U.S. Department of Transportation (USDOT) Hazardous Material?

Shipping Name per 49 CFR 172.101 Hazardous Materials Table: (Waste) Acrylic Acid, Stabilized, 8, UN2218, PG II

x Yes ☐ No

Hazard Class or Division: 8 UN/NA #: 2218 Packing Group: I x II III ERG #:

Technical descriptors if required:

DOT Special Permit that may apply (Include copy of permit):

RQ if required:

Inhalation Hazard: Zone

I. GENERATOR CERTIFICATION:

I agree by affixing my authorized signature that I hereby certify that the above and attached description is complete and accurate and that no omissions of characteristics, composition or properties exist and that all known or suspected hazards have been disclosed. I also certify that each sample provided to Tradebe is representative of the waste material described above and give Tradebe permission and consent to make amendments and corrections and that I am an authorized agent of the Generator.

Name(print):

Signature:

Title:

Date:

INTERNAL USE ONLY: Please indicate which Tradebe Facility(s) are being utilized for this Profile

TTR, LLC, East Chicago, IN

Bridgeport United Recycling Bridgeport, CT

ECC Stoughton, MA

TTR of TN LLC, Millington, TN

Zecco Northboro, MA

United Oil Recovery, Inc Meriden, CT

United Oil Recovery Inc Newington, NH

Norlite Corp Cohoes, NY

**LABORATORY TEST RESULTS**

Job ID : 12101285

Date 11/8/2012

Client Name: GB Sales & Consulting

Attn: Matt Bowman

Project Name: T.C Aryllic Acid

Client Sample ID: T.C Aryllic Acid

Job Sample ID: 12101285.01

Date Collected: 10/30/12

Sample Matrix: Liquid

Time Collected:

Other Information:

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SM 2120B	Apparent Color								
	Color	5000	PCU	100	200			10/31/12 12:00	AJ
SW-846 8316m	Acrylic Acid ¹	99.9	%	20000	2			11/08/12 12:30	AVB

¹-Parameter not available for accreditation



HOUSTON LABORATORIES
3820 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
PHONE (713) 665-0301

Certificate of Analysis

Number: 1030-2012110107-001A

Shantall Carpenter
A&B Labs
10100 East Frwy Suite 100
Houston Texas 77029

November 06, 2012

Sample ID: 12101285.01
Project Name :
Project Number :
Project Location:
Sample Point:

Sampled By:
Sample Of: Liquid
Sample Date: 10/30/2012
Sample Condition: 0.0 psig @ N/A °F
PO / Ref. No:

ANALYTICAL DATA

Test	Method	Result	Unit	Detection Limit	Lab Tech.	Date Analyzed
Karl Fischer Water - Volumetric	ASTM-D-4377	3.96	wt%		JS	11/06/12

Comments:

Sample On: 10/30/2012

Hydrocarbon Laboratory Manager

Quality Assurance: The above analyses are performed in accordance with ASTM, UOP or GPA guidelines for quality assurance, unless otherwise stated.

HAZARDOUS WASTE DETERMINATION FORM

Hazardous Waste Determination Form #:

A. WASTE DESCRIPTION: Acrylic acid wash water

Generation Process:

Once the acrylic acid product has been removed and the barge is RCRA empty, it is washed. The material is now a waste but not a U-listed waste or have a characteristic of ignitability. Waste still exhibits D002 and will be stored in an elementary neutralization unit to treat before disposal.

Generation Location:

Tubal-Cain Gas Free Services

Total Quantity and/or Estimated Generation Rate:

0-2000 gallons per month

B. WASTE PROPERTIES, CHARACTERISTICS, and CONSTITUENTS:

Physical State:

- ☐ Solid
☐ Solid w/freestanding or absorbed liquid
☒ Liquid (If liquid, indicate if the liquid is:
☒ Single-Layer
☐ Multi-Layer
☐ Gas

pH:

- ☒ ≤ 2
☐ > 2 but < 12.5
☐ N/A ☐ ≥ 12.5

Flashpoint:

- ☐ < 140 °F
☐ > 140°F but < 200 °F
☒ N/A ☐ > 200 °F

Characteristics:

- ☒ Corrosive
☐ Ignitable
☐ Reactive
☐ Radioactive
☐ Toxic
☐ None

PCB Content:

- ☐ > 5 ppm
☐ < 5 ppm
☒ None
Listed:
☐ P or U-list (DCC only**) ☐ N/A
☐ K-list
☐ F-list
**DCC – discarded commercial chemical products

Metal Content:

- | | | | |
|-------------------------------------|-----------------------------------|--------------------------------------|--|
| <input type="checkbox"/> Antimony* | <input type="checkbox"/> Chromium | <input type="checkbox"/> Molybdenum* | <input type="checkbox"/> Vanadium* |
| <input type="checkbox"/> Arsenic | <input type="checkbox"/> Cobalt* | <input type="checkbox"/> Nickel* | <input type="checkbox"/> Zinc* |
| <input type="checkbox"/> Barium | <input type="checkbox"/> Copper* | <input type="checkbox"/> Selenium | |
| <input type="checkbox"/> Beryllium* | <input type="checkbox"/> Lead | <input type="checkbox"/> Silver | <input checked="" type="checkbox"/> None |
| <input type="checkbox"/> Cadmium | <input type="checkbox"/> Mercury | <input type="checkbox"/> Thallium* | |

☐ *Check these metals (or metal compounds) only if they are in a friable, powdered, or finely divided state.

Composition (list all hazardous constituents): Acrylic acid

Constituent:	Volume % (range):	Constituent:	Volume % (range):
Acrylic acid	0 - 1 %		
Water	99%		

C. REMARKS (Attach all applicable documentation describing the waste (e.g. process knowledge statement, MSDS, sample analysis, etc.):

Acrylic acid-SDS, Process knowledge statement

D. FINAL DETERMINATION:

☐ Hazardous ☒ Non-hazardous ☐ Medical Waste ☐ Universal Waste ☐ Used Oil ☐ Prohibited by POTW

COMPLETED BY:

Kenny Trahan

DEPARTMENT:

Manager of Environmental Operations

CONTACT No.:

409-960-8025

DATE:

5/11/2015

Generator Knowledge Documentation

Generator: Tubal Cain Gas Free Services

Facility EPA ID#: TXR000080426 State ID#: 90733

Waste Name: Acrylic Acid and Acrylic acid wash water

Detailed Description of Waste Generation Process:

Upon arrival at tubal Cain, residual acrylic acid barge product is assumed to be good/valuable product and is pumped into totes. If, however; the product in totes is determined to be contaminated or unusable, it subsequently disposed as u-listed hazardous waste. When uncontaminated however, this material is valuable product and the containerized totes are subsequently sold and used as product. Consequently, this product is excluded from the definition of a solid waste (it is not discarded as per 40 cfr 261.2(a)(2). Once the product has been removed and the barge is rcra empty, it is washed. The waste water is a new waste stream with point of origination as it exits the barge and into a temporary storage container. This material is now a waste but not a u-listed waste (both because the U-code does not apply because this waste stream does not meet the the definition of a discarded commercial chemical product per 40 cfr 261.33 and because the barge was rcra empty as per 40cfr 261.33(c) and 40 Crf 261.7(b)(1)(iii)(B). This waste is not a characteristically hazardous waste stream for ignitability per 40 Crf 261.21 (a)). This waste stream, however, still exhibits the D002 characteristic. The temporary storage tank used to store and neutralize this wastewater meets the definition of an Elementary neutralization unit per 40 cfr 260.1. Epa excludes elementary neutralization units from generator hazardous waste treatment unit permitting requirements as per 40 cfr 264.1(g)(6). Consequently, this tank does not require rcra permitting. In addition, As per 40cfr 261.3(g)(1), The Resultant wastewater is non-hazardous and not subject to regulation under rcra. This non rcra wash water is kept segregated in this temporary storage and neutralization tank and sent to Newpark environmental for off-site disposal as non-hazardous waste.

Material Safety Data Sheet

Acrylic Acid MSDS

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Acrylic Acid	79-10-7	100

Toxicological Data on Ingredients: Acrylic Acid: ORAL (LD50): Acute: 33500 mg/kg [Rat]. 2400 mg/kg [Mouse]. DERMAL (LD50): Acute: 294 mg/kg [Rabbit]. VAPOR (LC50): Acute: 5300 mg/m 2 hours [Mouse]. 75 ppm 6 hours [Monkey].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (permeator), of eye contact (irritant, corrosive). Corrosive to skin and eyes on contact. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.

MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian germ and somatic cells.

TERATOGENIC EFFECTS: Classified SUSPECTED for human.

DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/male [POSSIBLE]. Classified Development toxin [SUSPECTED].

The substance is toxic to bladder, brain, upper respiratory tract, eyes, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 438°C (820.4°F)

Flash Points: CLOSED CUP: 50°C (122°F).

Flammable Limits: Not available.

Products of Combustion: These products are carbon oxides (CO, CO₂).

Fire Hazards in Presence of Various Substances:

Extremely flammable in presence of open flames and sparks.
Highly flammable in presence of heat.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available.
Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water.

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Flammable liquid. Corrosive liquid. Poisonous liquid.

Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep locked up.. Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis, moisture.

Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 2 (ppm) from ACGIH (TLV) [United States] [1997]

TWA: 2 [Australia]

STEL: 20 (ppm) [United Kingdom (UK)]

TWA: 10 (ppm) [United Kingdom (UK)]

Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Acrid (Strong.)

Taste: Not available.

Molecular Weight: 72.06 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 141°C (285.8°F)

Melting Point: 14°C (57.2°F)

Critical Temperature: 342°C (647.6°F)

Specific Gravity: 1.05 (Water = 1)

Vapor Pressure: 0.5 kPa (@ 20°C)

Vapor Density: 2.5 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.092 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; $\log(\text{oil/water}) = 0.4$

Ionicity (in Water): Not available.

Dispersion Properties:

Partially dispersed in methanol, diethyl ether.
See solubility in water.

Solubility:

Soluble in cold water.
Very slightly soluble in acetone.
Insoluble in diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances:

Extremely reactive or incompatible with oxidizing agents, acids, alkalis.
Reactive with moisture.

Corrosivity:

Slightly corrosive in presence of steel, of aluminum, of zinc, of copper.
Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Yes.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.

Acute oral toxicity (LD50): 2400 mg/kg [Mouse].

Acute dermal toxicity (LD50): 294 mg/kg [Rabbit].

Acute toxicity of the vapor (LC50): 75 6 hours [Monkey].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.

MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian germ and somatic cells.

TERATOGENIC EFFECTS: Classified SUSPECTED for human.

DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/male [POSSIBLE]. Classified Development toxin [SUSPECTED].

Causes damage to the following organs: bladder, brain, upper respiratory tract, eyes, central nervous system (CNS).

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (permeator), of eye contact (corrosive).

Hazardous in case of skin contact (corrosive), of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity:

Ecotoxicity in water (LC50): 130 mg/l 24 hours [Trout]. 460 mg/l 96 hours [Trout]. 270 mg/l 24 hours [Water flea].

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Acrylic Acid, Inhibited UNNA: UN2218 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

Rhode Island RTK hazardous substances: Acrylic Acid
Pennsylvania RTK: Acrylic Acid
Florida: Acrylic Acid
Minnesota: Acrylic Acid
Massachusetts RTK: Acrylic Acid
New Jersey: Acrylic Acid
TSCA 8(b) inventory: Acrylic Acid
TSCA 5(e) substance consent order: Acrylic Acid
TSCA 8(a) IUR: Acrylic Acid
TSCA 12(b) annual export notification: Acrylic Acid
SARA 313 toxic chemical notification and release reporting: Acrylic Acid
CERCLA: Hazardous substances.: Acrylic Acid: 1 lbs. (0.4536 kg)

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):

CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
CLASS E: Corrosive liquid.

OSCL (EEC):

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 2

Reactivity: 2

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 2

Reactivity: 2

Specific hazard:

Protective Equipment:

Gloves.
Full suit.
Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
Face shield.

HAZARDOUS WASTE DETERMINATION FORM

Hazardous Waste Determination Form #:

A. WASTE DESCRIPTION: Barge Wash Water and Water Blanket

Generation Process:

Product is stripped from barge and kept in separate storage. Barge tanks are then washed and rinsed. Wash and rinse water is then pumped into storage tank used exclusively for that purpose.

Generation Location:

Tubal-Cain Gas Free Services

Total Quantity and/or Estimated Generation Rate:

0-40000 gallons per month

B. WASTE PROPERTIES, CHARACTERISTICS, and CONSTITUENTS:

Physical State:

- ☐ Solid
☐ Solid w/freestanding or absorbed liquid
☒ Liquid (If liquid, indicate if the liquid is:
☐ Single-Layer
☒ Multi-Layer
☐ Gas

pH:

- ☐ ≤ 2
☒ > 2 but < 12.5
☐ N/A ☐ ≥ 12.5

Flashpoint:

- ☐ < 140 °F
☒ > 140°F but < 200 °F
☐ N/A ☒ > 200 °F

Characteristics:

- ☐ Corrosive
☐ Ignitable
☐ Reactive
☐ Radioactive
☐ Toxic
☒ None

PCB Content:

- ☐ > 5 ppm
☐ < 5 ppm
☒ None
Listed:
☐ P or U-list (DCC only**) ☐ K-list
☐ F-list ☒ N/A
 **DCC – discarded commercial chemical products

Metal Content:

- | | | | |
|-------------------------------------|-----------------------------------|--------------------------------------|--|
| <input type="checkbox"/> Antimony* | <input type="checkbox"/> Chromium | <input type="checkbox"/> Molybdenum* | <input type="checkbox"/> Vanadium* |
| <input type="checkbox"/> Arsenic | <input type="checkbox"/> Cobalt* | <input type="checkbox"/> Nickel* | <input type="checkbox"/> Zinc* |
| <input type="checkbox"/> Barium | <input type="checkbox"/> Copper* | <input type="checkbox"/> Selenium | |
| <input type="checkbox"/> Beryllium* | <input type="checkbox"/> Lead | <input type="checkbox"/> Silver | <input checked="" type="checkbox"/> None |
| <input type="checkbox"/> Cadmium | <input type="checkbox"/> Mercury | <input type="checkbox"/> Thallium* | |

☐ *Check these metals (or metal compounds) only if they are in a friable, powdered, or finely divided state.

Composition (list all hazardous constituents): Barge Wash Water

Constituent:	Volume % (range):	Constituent:	Volume % (range):
Oils and Grease	0 - 10%	Acrylic acid sodium salt	0 - 3%
Water	40 - 100%	Foreign Debris	< 1 %
Solids	0 - 40%		

C. REMARKS (Attach all applicable documentation describing the waste (e.g. process knowledge statement, MSDS, sample analysis, etc.):

Supplemental Waste Information; Generator knowledge documentation; Analytical

D. FINAL DETERMINATION:

☐ Hazardous ☒ Non-hazardous ☐ Medical Waste ☐ Universal Waste ☐ Used Oil ☐ Prohibited by POTW

COMPLETED BY:

Kenny Trahan

DEPARTMENT:

Manager of Environmental Operations

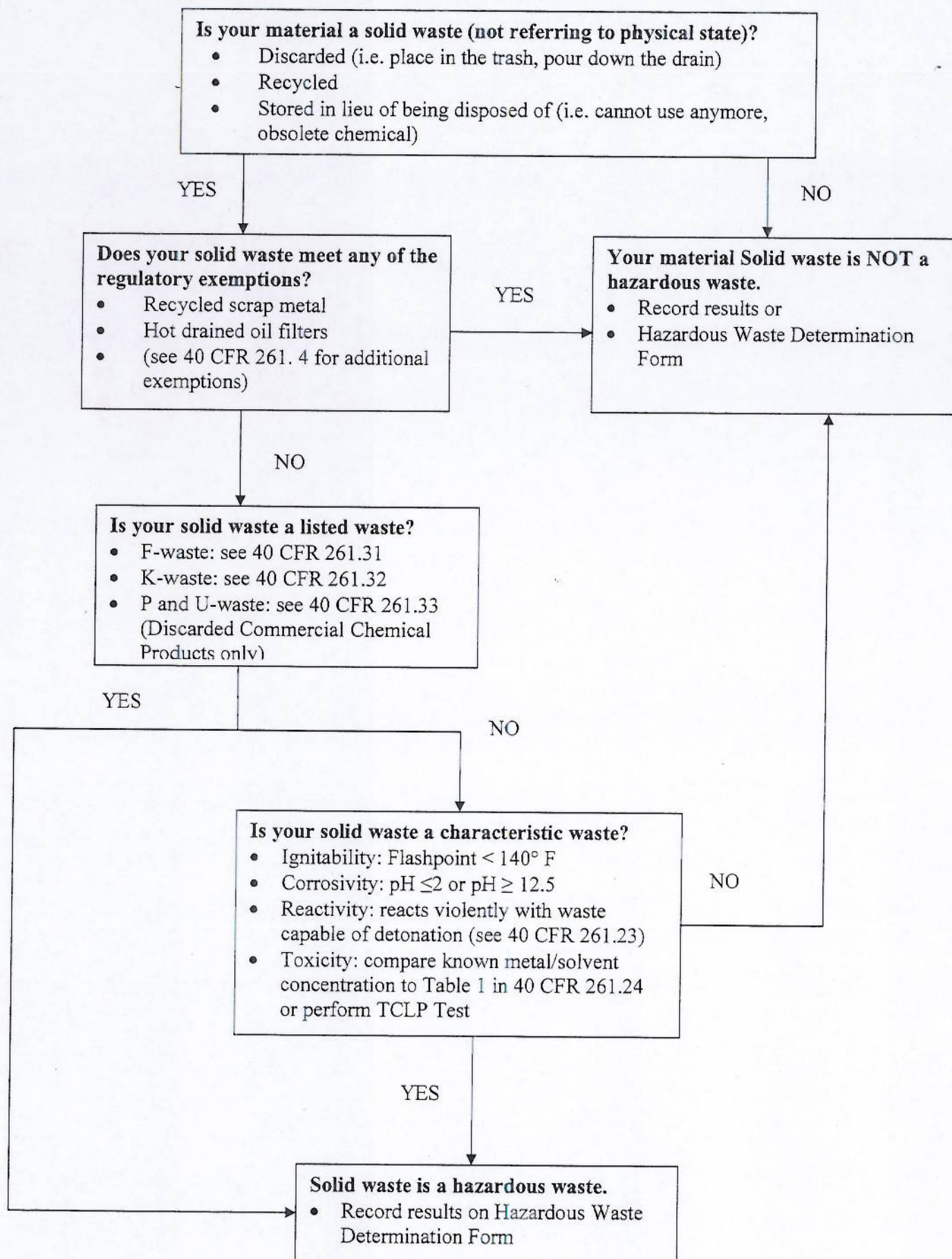
CONTACT No.:

409-960-8025

DATE:

5/4/2015

FIGURE 1: HAZARDOUS WASTE DETERMINATION FLOW CHART



Ecoserv / Newpark

Bilge Water

Profile # **0815152067BH**

NES TX/NID


NONHAZARDOUS SOLID WASTE DISPOSAL APPLICATION

1. GENERATOR CERTIFICATION

I hereby certify that I am the legal generator of the waste described below. The waste description on this form and all attachments are, to the best of my knowledge and ability, representative, complete, and accurate. This waste is not a regulated hazardous waste by USEPA, State of Origin, or State of Disposal, nor does it contain PCB's regulated by TSCA (i.e., 40 CFR 761) or any local authority.

GENERATOR'S SIGNATURE/GENERATOR'S AUTHORIZED SIGNATORY:

Date: 11-Jun-14

Signature: 

Printed/Typed Name, Title, Employer: Joshua McDonald, Product Control Coordinator, Tubal-Cain Marine Services

2. GENERATOR INFORMATION

a. Generator's Name: <u>Tubal-Cain Marine Services</u>	d. Billing Name: <u>GB Sales & Consulting, LLC</u>
b. Generator's Address: <u>8737 Old Yacht Club Road</u>	e. Billing Address: <u>14303 Hartshill Drive</u>
City: <u>Port Arthur</u> State: <u>TX</u> Zip: <u>77642</u>	City: <u>Houston</u> State: <u>TX</u> Zip: <u>77044</u>
Telephone: <u>(409) 460-8879</u>	f. Contact Person: <u>Grag Bowman</u>
Fax: <u>()</u>	g. Telephone: <u>713-419-8076</u>
c. Generator Representative: <u>Joshua McDonald</u>	Fax: <u>()</u>
Title: <u>Product Control Coordinator</u>	Email: <u>gallenb1963@gmail.com</u>
Telephone: <u>() same as above</u>	
Fax: <u>()</u>	

3. WASTE DESCRIPTION

a. Waste Name/Waste Description: Barge wash water and water blanket

b. Process of Waste Generation: Water blanket or wash water from barge cleaning operations

c. TCEQ Waste Code # (If Applicable): 90082051

d. Origin of Waste:

<input type="checkbox"/> <u>Oil and Gas Facility</u>	<input type="checkbox"/> <u>Industrial Facility</u>
Field Name/#: _____	Facility Name: <u>Tubal-Cain Gas Free Yard</u>
Lease Name/#: _____	Address: <u>8700A Old Yacht Club Road</u>
Well Name/#: _____	City: <u>Port Arthur</u>
Rig Name/#: _____	Parish/County: <u>Jefferson</u>
Parish/County: _____	State: <u>TX</u>
State: _____	Facility State Id: <u>90733</u>

e. Physical State: ☐ Solid ☐ Semi-Solid ☐ Liquid ☐ Powder ☒ Combination

f. Color: clear to dark brown/black Odor: varies, organic, oily PPE Level (A-KX): 11H

g. Anticipated Waste Volume: 15K Tons ☐ CuYds ☒ Gals ☐ CuMtrs ☐ BBls

Frequency: ☐ Year ☐ Month ☒ Week ☐ Day ☐ One Time ☐ Other

h. Specify Method of Shipment: Tank Truck

4. WASTE COMPOSITION & CONSTITUENTS

Physical Components	Concentration Range	Units	Amendments (Newpark Only)
Oil and Grease:	0-10	%	
Water:	40-100	%	
Solids:	0-40	%	
Foreign Debris:	< 1	%	
Other (List Below):			
See attached	Supplemental Info		
Acrylic acid sodium salt	0-3	%	
pH:	2.1-12.0	standard units	
Specific Gravity:	.98-1.05		
NORM-Ra 226:	< 30	pCi/g	
Total Activity:	< 150	pCi/g	

revised 1/11/07

Profile #

0815152067BH

(B) TOTAL(mg/l)

(C) GENERATOR KNOWLEDGE

Material/Serial Volume	Reg. Limit	Below	Above	Method	Material	Reg. Limit	Below	Above	Method
Barium	0.5 mg/L	X		A	Asbestos	5 mg/L	X		A
Carbon Tetrachloride	0.5 mg/L	X		A	Berthol	100 mg/L	X		A
Chlorobenzene	100 mg/L	X		A	Cadmium	1 mg/L	X		A
Chloroform	5 mg/L	X		A	Chromium	5 mg/L	X		A
m-Cresol	200 mg/L	X		A	Lead	5 mg/L	X		A
p-Cresol	200 mg/L	X		A	Mercury	0.2 mg/L	X		A
o-Cresol	200 mg/L	X		A	Selenium	1 mg/L	X		A
1,2-Dichlorobenzene	7.5 mg/L	X		A	Silver	5 mg/L	X		A
1,1-Dichloroethylene	0.7 mg/L	X		A					
1,2-Dichloroethane	0.5 mg/L	X		A					
2,4-Dichlorobenzene	0.13 mg/L	X		A					
Hexachlorobenzene	0.13 mg/L	X		A					
Hexachlorocyclopentadiene	0.5 mg/L	X		A					
Hexachlorocyclopentadiene	13 mg/L	X		A					
Hexyl Ethyl Ketone	200 mg/L	X		A					
Nitrobenzene	12 mg/L	X		A					
Pentachlorophenol	100 mg/L	X		A					
Pyridine	5 mg/L	X		A					
Tetrahydrostyrene	0.7 mg/L	X		A					
Trichloroethylene	0.5 mg/L	X		A					
2,4,6-Trichlorophenol	100 mg/L	X		A					
2,4,6-Trichlorophenol	2 mg/L	X		A					
Vinyl Chloride	0.2 mg/L	X		A					

5. SUPPLEMENTAL INFORMATION

☐ MSD Sheets ☒ Chain of Custody ☒ Analytical Data ☒ Other GK & Supplemental

FOR NEWPARK USE ONLY

(☒) NTW () NOGW () Exempt OGW () Disapproved

Standard Conditions: eye protection, gloves and splash suit required to handle waste

Special handling Procedures, Precautions, or Limitations on Approval:

Newpark Receiving Facility: Big Hill, TX Industrial

Profile Approval Date: 8-15-14

Approval Signature: Marc Forness

Profile Recertification Date: 8-15-15

Profile Expiration Date: 8-15-16

Submit completed form and all supplemental information to:

Newpark Environmental Management Services

207 Town Center Parkway, 2nd Floor

Lafayette, LA 70506

email: profile@newparkenv.com

Phone: (337) 984-4445

Fax (337) 989-2018

Supplemental Waste Information (Page 1 of 2)

For barge wash water and water blanket waste stream from Tubal-Cain Gas Free Services
(SWR# 90733 and TWC# 00082051)

Components

Hydrocarbons and chemical materials: (0-5%)

Oil

Kerosene

6 Oil

VGO

Naphtha

Crude Oil

Acrylates

Styrene

Glycol

Glycol ethers

Amines

Organic acids

Acrylic acid

Vinyl Acetate Monomer

Methyl Methacrylate

FOOD/FEED based materials (0-5%)

Sugars

Fats

Oils

Salts 0-1% 0-1%

NAOH/H₂SO₄ 0-1%

Alcohols 0-3%

GENERATOR KNOWLEDGE DOCUMENTATION

GENERATOR:

Facility ID #:

Tubal-Cain Marine Services

Waste Name:

90733

State Waste Code #:

Barge wash water and water blanket

00082051

Detailed Description of Waste Generation Process:

Product is stripped from barge (including sumps) and kept in separate storage. Barge container is then washed and rinsed. Wash and rinse water is then pumped into storage container used exclusively for that purpose. Wash and rinse water is then pumped from container to tank truck for movement to disposal site.

Laboratory analysis of the hazardous waste characteristics, listed below, was not performed based upon the following generator knowledge:

TOXICITY

TCLP/Total Metals

See analysis

TCLP/Total Volatile Organics

See analysis

TCLP/Total Semivolatile Organics

See analysis

TCLP/Total Herbicides and Pesticides

No RCRA regulated Herbicides and/or Pesticides are handled, managed or used at this facility nor are they introduced into the waste generation process. Therefore, there are none in the waste.

REACTIVITY

See analysis

CORROSIVITY

See analysis

IGNITABILITY

See analysis

Signature:

Title:

Joshua McDonald

Date:

Product Control Coordinator

Employer:

Tubal-Cain Marine Services

0815152067BH

Laboratory Analysis Report

Total Number of Pages: 14

Job ID : 14071541



10100 East Freeway Suite 100, Houston, TX 77029 tel: 713-453-6060, fax: 713-453-6091 <http://www.ablabs.com>

Client Project Name :
TCM Water Tank

Report To : Client Name: GB Sales & Consulting
Attn: Greg Bowman
Client Address: 14303 Hartshill Drive
City, State, Zip: Houston, Texas, 77044

P.O.#:
Sample Collected By:
Date Collected: 07/31/14

A&B Labs has analyzed the following samples...

Client Sample ID	Matrix	A&B Sample ID
TC Water	Water	14071541.01

Alisha Hughes

Released By: Alisha Hughes
Title: Project Manager
Date: 8/6/2014



This Laboratory is NELAP (T104704213-14-11) accredited. Effective: 04/01/2014; Expires: 03/31/2015
Scope: Non-Potable Water, Drinking Water, Air, Solid, Hazardous Waste

I am the laboratory manager, or his/her designee, and I am responsible for the release of this data package. This laboratory data package has been reviewed and is complete and technically compliant with the requirements of the methods used, except where noted in the attached exception reports. I affirm, to the best of my knowledge that all problems/anomalies observed by this laboratory (and if applicable, any and all laboratories subcontracted through this laboratory) that might affect the quality of the data, have been identified in the Laboratory Review Checklist, and that no information or data have been knowingly withheld that would affect the quality of the data.

This report cannot be reproduced, except in full, without prior written permission of A&B Labs. Results shown relate only to the items tested. Samples are assumed to be in acceptable condition unless otherwise noted. Blank correction is not made unless otherwise noted. Air concentrations reported are based on field sampling information provided by client. Soil samples are reported on a wet weight basis unless otherwise noted. Uncertainty estimates are available on request.

Date Received: 07/31/2014 14:28

LABORATORY TERM AND QUALIFIER DEFINITION REPORT



Job ID : 14071541

Date: 8/6/2014

General Term Definition

Back-Wt	Back Weight	Post-Wt	Post Weight
BRL	Below Reporting Limit	ppm	parts per million
cfu	colony-forming units	Pre-Wt	Previous Weight
Conc.	Concentration	Q	Qualifier
D.F.	Dilution Factor	RegLimit	Regulatory Limit
Front-Wt	Front Weight	RPD	Relative Percent Difference
LCS	Laboratory Check Standard	RptLimit	Reporting Limit
LCSD	Laboratory Check Standard Duplicate	SDL	Sample Detection Limit
MS	Matrix Spike	surr	Surrogate
MSD	Matrix Spike Duplicate	T	Time
MW	Molecular Weight	TNTC	Too numerous to count

Qualifier Definition

D1	Sample required dilution due to matrix effects.
H3	Sample was received and analyzed past holding time.
M2	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits due to matrix interference. "The sample randomly selected as QC for this batch was not part of your project. Therefore, this sample matrix is not applicable to your project samples."
M6	Not calculated. Sample concentration high. Spike out of linear range. Control limits do not apply. "The sample randomly selected as QC for this batch was not part of your project. Therefore, this sample matrix is not applicable to your project samples."
M9	Matrix Spike and/or Matrix Spike Duplicate recovery is below laboratory control limits.
V1	CCV recovery is above acceptance limits. This target analyte was not detected in the sample.

08151520678H



LABORATORY TEST RESULTS

Job ID : 14071541

Date 8/6/2014

Client Name: GB Sales & Consulting

Attn: Greg Bowman

Project Name: TCM Water Tank

Client Sample ID: TC Water

Job Sample ID: 14071541.01

Date Collected: 07/31/14

Sample Matrix: Water

Time Collected: 14:30

Other Information:

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 1010A	Ignitability (Flash Point)								
	Ignitability	>150	°F	1				08/04/14 08:00	MAM
SW-846 7.3	Reactive Cyanide								
	Reactive Cyanide ¹	BRL	mg/L	1	25			08/04/14 14:00	SR
SW-846 7.3	Reactive Sulfide								
	Reactive Sulfide ¹	BRL	mg/L	1	25			08/04/14 15:10	SR
SW-846 8260C	TCLP VOC								
	1,1-Dichloroethylene	BRL	mg/L	10	1.3	0.6		08/02/14 05:33	BPC
	1,2-Dichloroethane	BRL	mg/L	10	1.3	0.5		08/02/14 05:33	BPC
	1,4-Dichlorobenzene	BRL	mg/L	10	1.5	7.5		08/02/14 05:33	BPC
	Benzene	BRL	mg/L	10	1.3	0.5		08/02/14 05:33	BPC
	Carbon tetrachloride	BRL	mg/L	10	1.3	0.5		08/02/14 05:33	BPC
	Chlorobenzene	BRL	mg/L	10	1.5	70		08/02/14 05:33	BPC
	Chloroform	BRL	mg/L	10	1.3	6		08/02/14 05:33	BPC
	MEK	BRL	mg/L	10	1.3	200		08/02/14 05:33	BPC
	Tetrachloroethylene	BRL	mg/L	10	1.3	0.7		08/02/14 05:33	BPC
	Trichloroethylene	BRL	mg/L	10	1.3	0.5		08/02/14 05:33	BPC
	Vinyl Chloride	BRL	mg/L	10	1.3	0.2		08/02/14 05:33	BPC
	1,2-Dichloroethane-d4(surr)	113	%	10	70-130			08/02/14 05:33	BPC
	Dibromofluoromethane(surr)	110	%	10	70-130			08/02/14 05:33	BPC
	p-Bromofluorobenzene(surr)	124	%	10	70-130			08/02/14 05:33	BPC
	Toluene-d8(surr)	98	%	10	70-130			08/02/14 05:33	BPC
SW-846 8270D	TCLP Semivolatiles								
	1,4-Dichlorobenzene	BRL	mg/L	2	0.1	7.5	D1	08/05/14 18:30	PNS
	2,4,5-Trichlorophenol	BRL	mg/L	2	0.1	400		08/05/14 18:30	PNS
	2,4,6-Trichlorophenol	BRL	mg/L	2	0.1	2		08/05/14 18:30	PNS
	2,4-Dinitrotoluene	BRL	mg/L	2	0.1	0.13		08/05/14 18:30	PNS
	2-Methylphenol	0.249	mg/L	2	0.1	200		08/05/14 18:30	PNS
	3- & 4-Methylphenols	0.587	mg/L	2	0.2	200		08/05/14 18:30	PNS
	Hexachlorobenzene	BRL	mg/L	2	0.1	0.13	V1	08/05/14 18:30	PNS
	Hexachlorobutadiene	BRL	mg/L	2	0.1	0.5		08/05/14 18:30	PNS
	Hexachloroethane	BRL	mg/L	2	0.1	3		08/05/14 18:30	PNS
	Nitrobenzene	BRL	mg/L	2	0.1	2		08/05/14 18:30	PNS
	Pentachlorophenol	BRL	mg/L	2	0.5	100		08/05/14 18:30	PNS
	Pyridine	BRL	mg/L	2	0.1	5		08/05/14 18:30	PNS
	2,4,6-Tribromophenol(surr)	86	%	2	10-120			08/05/14 18:30	PNS
	2-Fluorobiphenyl(surr)	73.1	%	2	30-115			08/05/14 18:30	PNS
	2-Fluorophenol(surr)	74.8	%	2	15-111			08/05/14 18:30	PNS
	Nitrobenzene-d5(surr)	72.8	%	2	20-120			08/05/14 18:30	PNS

081815 2067BH



LABORATORY TEST RESULTS

Job ID: 14071541

Date 8/6/2014

Client Name: GB Sales & Consulting

Attn: Greg Bowman

Project Name: TCM Water Tank

Client Sample ID: TC Water

Job Sample ID: 14071541.01

Date Collected: 07/31/14

Sample Matrix: Water

Time Collected: 14:30

Other Information:

Test Method	Parameter/Test Description	Result	Units	DF	Rpt Limit	Reg Limit	Q	Date Time	Analyst
SW-846 8270D	TCLP Semivolatiles								
	Phenol-d6(surr)	79	%	2	15-120			08/05/14 18:30	PNS
	p-Terphenyl-d14(surr)	63	%	2	18-137			08/05/14 18:30	PNS
SW-846 9040C	Corrosivity, pH								
	pH	10.02	s.u.				H3	08/01/14 09:40	AJ
	Temperature when read, °C ¹	21.4	s.u.				H3	08/01/14 09:40	AJ

¹-Parameter not available for accreditation

HAZARDOUS WASTE DETERMINATION FORM

Hazardous Waste Determination Form #:

A. WASTE DESCRIPTION: Chloroform Waste

Generation Process:

Product heel is stripped from barge before wash/rinse. All product heel removed from barge is put in totes for disposal.

Generation Location:

Tubal-Cain Gas Free Services

Total Quantity and/or Estimated Generation Rate:

0-2000 gallons per month

B. WASTE PROPERTIES, CHARACTERISTICS, and CONSTITUENTS:

Physical State:

- ☐ Solid
☐ Solid w/freestanding or absorbed liquid
☒ Liquid (If liquid, indicate if the liquid is:
 ☒ Single-Layer
 ☐ Multi-Layer
☐ Gas

pH:

- ☐ ≤ 2
☒ > 2 but < 12.5
☐ N/A ☐ ≥ 12.5

Flashpoint:

- ☒ < 140 °F
☐ > 140°F but < 200 °F
☐ N/A ☐ > 200 °F

Characteristics:

- ☐ Corrosive
☐ Ignitable
☐ Reactive
☐ Radioactive
☒ Toxic
☐ None

PCB Content:

- ☐ > 5 ppm
☐ < 5 ppm
☒ None
Listed:
☒ P or U-list (DCC only**) ☐ K-list
☐ F-list ☐ N/A
 **DCC – discarded commercial chemical products

Metal Content:

- | | | | |
|-------------------------------------|-----------------------------------|--------------------------------------|--|
| <input type="checkbox"/> Antimony* | <input type="checkbox"/> Chromium | <input type="checkbox"/> Molybdenum* | <input type="checkbox"/> Vanadium* |
| <input type="checkbox"/> Arsenic | <input type="checkbox"/> Cobalt* | <input type="checkbox"/> Nickel* | <input type="checkbox"/> Zinc* |
| <input type="checkbox"/> Barium | <input type="checkbox"/> Copper* | <input type="checkbox"/> Selenium | |
| <input type="checkbox"/> Beryllium* | <input type="checkbox"/> Lead | <input type="checkbox"/> Silver | <input checked="" type="checkbox"/> None |
| <input type="checkbox"/> Cadmium | <input type="checkbox"/> Mercury | <input type="checkbox"/> Thallium* | |

☐ *Check these metals (or metal compounds) only if they are in a friable, powdered, or finely divided state.

Composition (list all hazardous constituents): Chloroform Waste

Constituent:	Volume % (range):	Constituent:	Volume % (range):
Chloroform	95 - 100%		

C. REMARKS (Attach all applicable documentation describing the waste (e.g. process knowledge statement, MSDS, sample analysis, etc.):

Chloroform-SDS, Report on Carcinogens, Eleventh Edition (Substance Profiles-Chloroform CAS No. 67-66-3)

D. FINAL DETERMINATION:

- ☒ Hazardous ☐ Non-hazardous ☐ Medical Waste ☐ Universal Waste ☐ Used Oil ☐ Prohibited by POTW

COMPLETED BY:

Kenny Trahan

DEPARTMENT:

Manager of Environmental Operations

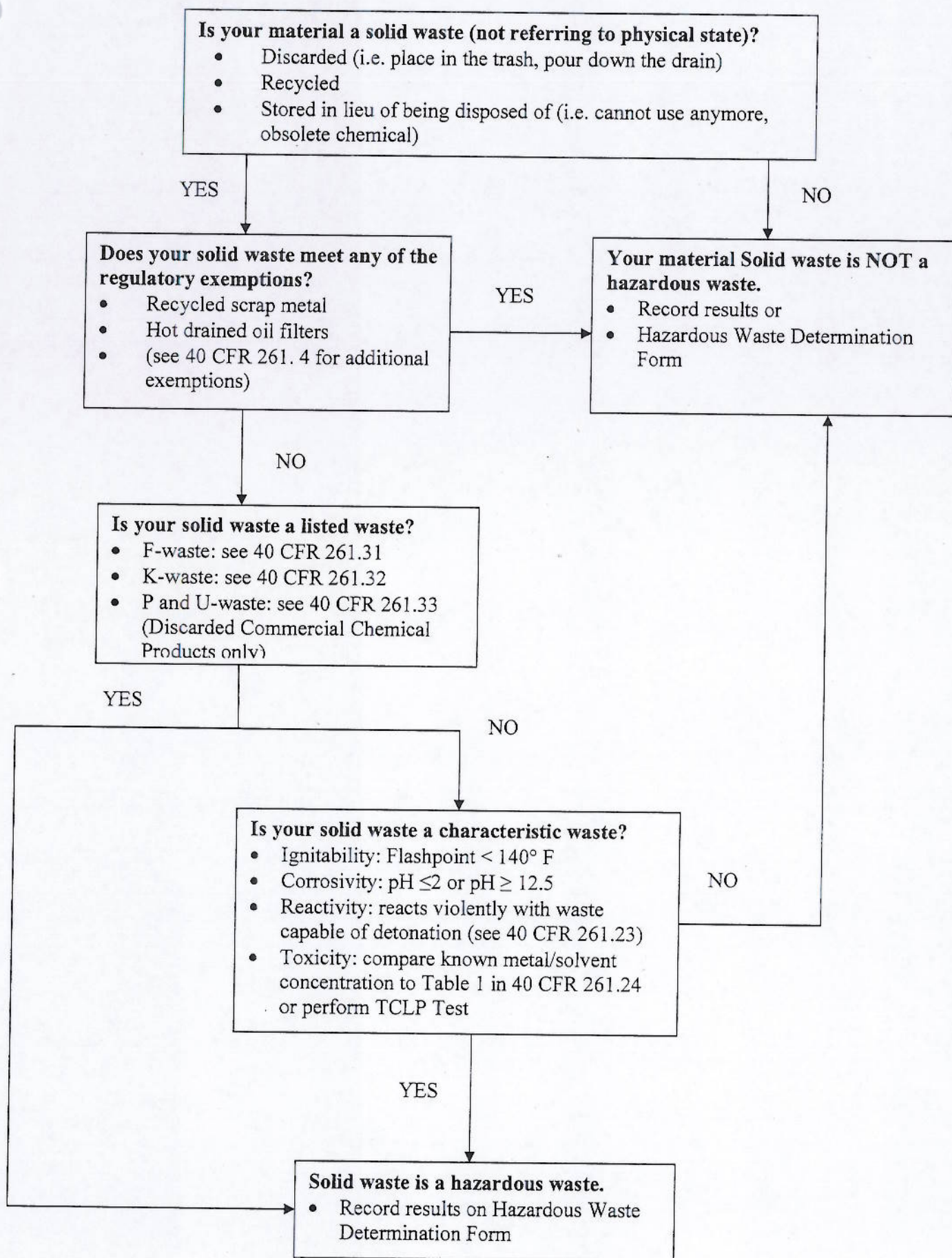
CONTACT No.:

409-960-8025

DATE:

3/17/2015

FIGURE 1: HAZARDOUS WASTE DETERMINATION FLOW CHART



SAFETY DATA SHEET

Version 3.1
Revision Date 02/26/2015
Print Date 05/01/2015

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Chloroform

Product Number : C2432
Brand : Sigma-Aldrich
Index-No. : 602-006-00-4

CAS-No. : 67-66-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 3), H331

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Carcinogenicity (Category 2), H351

Reproductive toxicity (Category 2), H361

Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336

Specific target organ toxicity - repeated exposure (Category 1), Liver, Kidney, H372

Acute aquatic toxicity (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H336 May cause drowsiness or dizziness.
H351 Suspected of causing cancer.

H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure.
H402	Harmful to aquatic life.
Precautionary statement(s)	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear eye protection/ face protection.
P280	Wear protective gloves.
P281	Use personal protective equipment as required.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P311	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms : Trichloromethane
Methyldyne trichloride

Formula : CHCl_3
Molecular weight : 119.38 g/mol
CAS-No. : 67-66-3
EC-No. : 200-663-8
Index-No. : 602-006-00-4

Hazardous components

Component	Classification	Concentration
Chloroform	Acute Tox. 4; Acute Tox. 3; Skin Irrit. 2; Eye Irrit. 2A; Carc. 2; Repr. 2; STOT SE 3; STOT RE 1; Aquatic Acute 3; H302, H315, H319, H331, H336, H351, H361, H372, H402	$\leq 100\%$

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Carbon oxides, Hydrogen chloride gas

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Chloroform	67-66-3	TWA	10.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Central Nervous System impairment Liver damage Embryo/fetal damage Confirmed animal carcinogen with unknown relevance to humans		
		ST	2.000000 ppm 9.780000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen See Appendix A		
		C	50.000000 ppm 240.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.		

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7 mm

Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7 mm

Break through time: 480 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

- | | |
|---|---|
| a) Appearance | Form: liquid, clear
Colour: colourless |
| b) Odour | No data available |
| c) Odour Threshold | No data available |
| d) pH | No data available |
| e) Melting point/freezing point | Melting point/range: -63 °C (-81 °F) |
| f) Initial boiling point and boiling range | 60.5 - 61.5 °C (140.9 - 142.7 °F) |
| g) Flash point | No data available |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | No data available |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapour pressure | 213.3 hPa (160.0 mmHg) at 20.0 °C (68.0 °F) |
| l) Vapour density | No data available |
| m) Relative density | 1.492 g/mL at 25 °C (77 °F) |
| n) Water solubility | No data available |
| o) Partition coefficient: n-octanol/water | log Pow: 1.97 |
| p) Auto-ignition temperature | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity | No data available |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

9.2 Other safety information

- | | |
|-----------------|--------------------------------|
| Surface tension | 27.1 mN/m at 20.0 °C (68.0 °F) |
|-----------------|--------------------------------|

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

Contains the following stabiliser(s):

2-Methyl-2-butene (≥ 0.001 - ≤ 0.015 %)

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

Strong oxidizing agents, Strong bases, Magnesium, Sodium/sodium oxides, Lithium

10.6 Hazardous decomposition products

Other decomposition products - No data available

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - 908 mg/kg

Remarks: Behavioral: Change in motor activity (specific assay). Behavioral: Ataxia. Lungs, Thorax, or Respiration: Respiratory stimulation.

LOEC Inhalation - Rat - male - 6 h - 500 ppm

LD50 Dermal - Rabbit - > 20,000 mg/kg

No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Irritating to skin. - 24 h

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Irritating to eyes. - 24 h

Respiratory or skin sensitisation

Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity

Laboratory experiments have shown mutagenic effects.

Carcinogenicity

Carcinogenicity - Rat - Oral

Tumorigenic: Carcinogenic by RTECS criteria. Leukaemia

The National Cancer Institute (NCI) has found clear evidence for carcinogenicity. Limited evidence of a carcinogenic effect.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Chloroform)

NTP: Reasonably anticipated to be a human carcinogen (Chloroform)

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

Suspected of damaging the unborn child. Suspected human reproductive toxicant

Specific target organ toxicity - single exposure

May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure

The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1. - Liver, Kidney

Aspiration hazard

No data available

Additional Information

RTECS: FS9100000

Vomiting, Gastrointestinal disturbance, Exposure to and/or consumption of alcohol may increase toxic effects.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION**12.1 Toxicity**

Toxicity to fish

LC50 - *Leuciscus idus* (Golden orfe) - 162 mg/l - 48 h

LC100 - *Leuciscus idus* (Golden orfe) - 220 mg/l - 48 h

LC50 - other fish - 97 mg/l - 96 h

LC50 - *Danio rerio* (zebra fish) - 121 mg/l - 96 h

NOEC - *Oryzias latipes* - 122 mg/l - 10 d

NOEC - *Oncorhynchus mykiss* (rainbow trout) - 24 mg/l - 96 h

Toxicity to daphnia and
other aquatic
invertebrates

EC50 - *Daphnia magna* (Water flea) - 79.00 mg/l - 24 h

Immobilization EC50 - *Daphnia magna* (Water flea) - 51.6 mg/l - 48 h

NOEC - *Daphnia magna* (Water flea) - 120 mg/l - 11 d

Toxicity to algae

EC50 - No information available. - 500.00 mg/l - 24 h

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

Bioaccumulation

Lepomis macrochirus (Bluegill) - 14 d
- 0.11 mg/l

Bioconcentration factor (BCF): 6

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.

13. DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods****Product**

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 1888 Class: 6.1
Proper shipping name: Chloroform
Reportable Quantity (RQ): 10 lbs

Packing group: III

Poison Inhalation Hazard: No

IMDG

UN number: 1888 Class: 6.1
Proper shipping name: CHLOROFORM

Packing group: III

EMS-No: F-A, S-A

IATA

UN number: 1888 Class: 6.1
Proper shipping name: Chloroform

Packing group: III

15. REGULATORY INFORMATION

SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

	CAS-No.	Revision Date
Chloroform	67-66-3	2008-11-03

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Chloroform	67-66-3	2008-11-03

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Chloroform	67-66-3	2008-11-03

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Chloroform	67-66-3	2008-11-03

New Jersey Right To Know Components

	CAS-No.	Revision Date
Chloroform	67-66-3	2008-11-03

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.

	CAS-No.	Revision Date
Chloroform	67-66-3	2011-09-01

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

	CAS-No.	Revision Date
Chloroform	67-66-3	2011-09-01

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H402	Harmful to aquatic life.
Repr.	Reproductive toxicity
Skin Irrit.	Skin irritation
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	3
Fire Hazard:	0
Reactivity Hazard:	0

Further information

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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 3.15

Revision Date: 02/26/2015

Print Date: 05/01/2015

Chloroform

CAS No. 67-66-3

Reasonably anticipated to be a human carcinogen
First Listed in the *Second Annual Report on Carcinogens* (1981)



Carcinogenicity

Chloroform (CHCl_3) is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (NCI 1976, IARC 1972, 1979, 1982, 1987, 1999). When administered by gavage (in corn oil), the compound induced hepatocellular carcinomas in mice of both sexes. It also induced increased incidences of kidney epithelial tumors in male rats when administered by the same route (NCI 1976). When administered orally (in olive oil), chloroform induced hepatomas and cirrhosis in female mice (IARC 1979). Chloroform in toothpaste or arachis oil, administered to four strains of mice by gavage, induced kidney epithelial tumors in males of one strain (Roe *et al.* 1979). When administered orally in drinking water, chloroform induced increased incidences of renal tubular cell adenomas and/or adenocarcinomas in male rats, but no renal or hepatic tumors were induced in male or female mice (Jorgenson *et al.* 1985). Another recent study reported the development of hepatic adenofibrosis in rats of both sexes and neoplastic nodules in females when chloroform was administered in the drinking water (Tumasonis *et al.* 1987).

There is inadequate evidence for the carcinogenicity of chloroform in humans (IARC 1982, 1987, 1999). Several epidemiological and ecological studies indicate that there is an association between cancer of the large intestine, rectum, and/or urinary bladder and the constituents of chlorinated water (EPA 1985). Although data may suggest a possible increased risk of cancer from exposure to chloroform in chlorinated drinking water, the data were insufficient to evaluate the carcinogenic potential of chloroform.

Properties

Chloroform is a colorless, volatile liquid that is nonflammable. It is slightly soluble in water and is miscible with oils, ethanol, ether, and other organic solvents. Chloroform has a pleasant, nonirritating odor. It is unstable when exposed to air, light, and/or heat, which cause it to break down to phosgene, hydrochloric acid, and chlorine. It is usually stabilized by the addition of 0.5% to 1% ethanol. When heated to decomposition, chloroform emits toxic fumes of hydrochloric acid and other chlorinated compounds (WHO 1994, HSDB 2001).

Use

Approximately 96% to 98% of the chloroform produced in the United States is used to make hydrochlorofluorocarbon-22 (HCFC-22) (ATSDR 1997, HSDB 2001). HCFC-22 is used as a refrigerant (70% of the HCFC-22 produced) and in the production of fluoropolymers (30%). However, this use is expected to diminish because of the phaseout of chlorine-containing fluorocarbons. Although the ozone depleting potential of HCFC-22 is relatively low, it is expected to be phased out in the United States by 2010 (HSDB 2001).

Other uses include the following: as a solvent in the extraction and purification of some antibiotics, alkaloids, vitamins, and flavors; as a solvent for lacquers, floor polishes, and adhesives; in artificial silk manufacturing; in resins, fats, greases, gums, waxes, oils, and rubber; as an industrial solvent in photography and dry cleaning; as a heat transfer medium in fire extinguishers; as an intermediate in the

preparation of dyes and pesticides; and as a fumigant for stored grain crops (WHO 1994, ATSDR 1997, HSDB 2001). It is also used in certain medical procedures, such as dental root canal surgeries, and in combination with other ingredients as an experimental treatment of herpes zoster, or for control of screw worm in animals. It was used as an anesthetic prior to World War II, but this use has been banned. In addition, the U.S. FDA has banned its use in drugs, cosmetics, and food packaging (Kirk-Othmer 1979, ATSDR 1997).

Production

One U.S. manufacturer began chloroform production in 1903, but commercial production was not reported until 1922 (IARC 1979). Since the early 1980s, the production of chloroform has increased by 20% to 25%, primarily due to the great demand for the refrigerant HCFC-22 (ATSDR 1997). In 1994, 565 million lb of chloroform was produced in the United States (CEN 1996). There are currently at least two manufacturers and 38 suppliers of chloroform in the United States (ATSDR 1997, HSDB 2001, Chem Sources 2001).

Imports of chloroform decreased from a high of 38 million lb in 1989 to 5.3 million lb in 1994 (USDOC 1990; ATSDR 1997). In 2000, the U.S. imported approximately 406,000 lb of chloroform (ITA 2001). Exports increased from 33.5 million lbs in 1985 to 93 million lb by 1994 (ATSDR 1997). In 2000, U.S. exports exceeded 220 million lb (ITA 2001).

Exposure

The primary routes of potential human exposure to chloroform are ingestion, inhalation, and dermal contact with water (e.g., while showering, swimming, cleaning, and cooking). Therefore, practically all humans are exposed to low levels of the chemical (NCI 1976, IARC 1979, 1999, ATSDR 1997). Ingestion of contaminated water is expected to be a primary source because many drinking water supplies contain chloroform as a by-product of chlorination for disinfection purposes. The concentration of chloroform in drinking water increases with time with typical levels ranging from 2 to 68 ppb. Typical levels of exposure to chloroform from drinking water are estimated to range from 0.5 $\mu\text{g/kg}$ b.w. per day to 10 $\mu\text{g/kg}$ b.w. per day. Foods such as dairy products, oils/fats, vegetables, bread, and beverages may also contain small amounts of chloroform; typical average levels range from 52 to 71 $\mu\text{g/kg}$ with an estimated average daily intake of 1 $\mu\text{g/kg}$ b.w. per day (WHO 1994, IARC 1999). Chloroform was detected in the atmosphere at concentrations ranging from 0.10 to 10.0 $\mu\text{g/m}^3$ and in indoor air at 1.0 to 20.0 $\mu\text{g/m}^3$ (ATSDR 1997). Exposure via inhalation results in 60% to 80% absorption. Placental transfer of chloroform has also been demonstrated (WHO 1994).

A recent investigation demonstrated that water temperature exerts a very strong effect on dermal absorption of chloroform while bathing (Gordon *et al.* 1998). Among ten subjects, the mean amounts of chloroform exhaled at the lowest bath-water temperature (30°C) was 0.2 μg , while at the highest temperature (40°C) it was 7 μg , an increase by a factor of 35.

Although much emphasis has been given to trihalomethane exposures resulting from ingestion of chlorinated water, several studies have shown that inhalation and dermal exposure are important. Lindstrom *et al.* (1997) examined dermal and inhalation exposures that occur from swimming in a chlorinated pool. In this case, two college students (one male and one female) were monitored during a typical two-hour workout. Chloroform breath concentrations, found to be as high as 371 $\mu\text{g/m}^3$ and 339 $\mu\text{g/m}^3$ for the subjects, were more than two times the maximum possible inhalation-only level. Furthermore, the maximum alveolar breath concentrations ultimately rose to more than twice the indoor chloroform level, suggesting that dermal absorption was more important than inhalation in this case. The

dermal contribution was estimated at greater than 80% of the total exposure.

Occupational exposure may occur during the manufacture or use of chloroform. Persons working at wastewater and other treatment plants can be exposed to significant levels of the chemical (ATSDR 1997). Other industries using chloroform include building and paperboard industries, iron and steel manufacturing, internal combustion engine industries, pesticide manufacturing, breweries, dry cleaning, and food processing industries. The National Occupational Hazard Survey, conducted by NIOSH from 1972 to 1974, estimated that 215,000 workers were potentially exposed to chloroform in the workplace (NIOSH 1976). The National Occupational Exposure Survey (1981-1983) indicated that 95,330 total workers, including 40,973 women, potentially were exposed to chloroform (NIOSH 1984). EPA's Toxic Chemical Release Inventory (TRI) listed 154 industrial facilities that reported environmental releases of chloroform in 1999 (TRI99 2001). Reported environmental releases of chloroform showed a steady decline from approximately 28 million lb in 1988 to 5.5 million lb in 1999.

Regulations

DOT

Chloroform is considered a hazardous material and special requirements have been set for marking, labeling, and transporting this material

EPA

Clean Air Act

NESHAP: Listed as a Hazardous Air Pollutant (HAP)

NSPS: Manufacture of substance is subject to certain provisions for the control of Volatile Organic Compound (VOC) emissions

Prevention of Accidental Release: Threshold Quantity (TQ) = 20,000 lb

Urban Air Toxics Strategy: Identified as one of 33 HAPs that present the greatest threat to public health in urban areas

Clean Water Act

Effluent Guidelines: Listed as a Toxic Pollutant

Water Quality Criteria: Based on fish/shellfish and water consumption = 5.7 µg/L; based on fish/shellfish consumption only = 470 µg/L

Comprehensive Environmental Response, Compensation, and Liability Act

Reportable Quantity (RQ) = 10 lb

Emergency Planning and Community Right-to-Know Act

Toxics Release Inventory: Listed substance subject to reporting requirements

Reportable Quantity (RQ) = 10 lb

Threshold Planning Quantity (TPQ) = 10,000 lb

Resource Conservation and Recovery Act

Characteristic Toxic Hazardous Waste: TCLP Threshold = 6.0 mg/L

Listed Hazardous Waste: Waste codes in which listing is based wholly or partly on substance - K044, K009, K010, K019, K020, K021, K029, K073, K116, K149, K150, K151, K158

Listed as a Hazardous Constituent of Waste

Safe Drinking Water Act

Maximum Contaminant Level (MCL) = 0.080 mg/L (sum of chloroform, bromodichloromethane, dibromochloromethane, and bromoform)

FDA

Chloroform may not be used as an ingredient in drug products or in pharmaceutical compounding

Chloroform may not be used as an ingredient in cosmetic products

OSHA

Ceiling Concentration = 50 ppm (240 mg/m³)

Guidelines

ACGIH

Threshold Limit Value - Time-Weighted Average Limit (TLV-TWA) = 10 ppm

NIOSH

Immediately Dangerous to Life and Health (IDLH) = 500 ppm

Short-term Exposure Limit (STEL) = 2 ppm (9.78 mg/m³) (60 minute exposure)

Listed as a potential occupational carcinogen

REFERENCES

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TRADEBE TREATMENT AND RECYCLING, LLC

Profile # _____

TRADEBE

GENERATOR WASTE STREAM PROFILE SHEET

Environmental Services, LLC

Fax or email completed profile sheet to:

TTR Fax: 219-397-6411

UIS Fax: 203-238-6744

Process Code

usa.approvals@tradebe.com

A. GENERATOR INFORMATION:

MAILING OR SITE ADDRESS

USE CONTINUATION IF SITE & MAILING ADDRESSES ARE DIFFERENT

Generator #:

Generator Name: Tubal CainGenerator Address: 8700A Old Yacht Club RdCity: Port Arthur State: TX Zip: 77642Contact Name: Cade DurioGenerator Phone: 409-960-9273

Generator Fax:

Generator Email: cade@tcmarinereervices.comGenerator USEPA/Federal ID #: TXR000080426

If no ID number is the Generator a "Conditionally Exempt Small Quantity Generator?"

Generator SIC (or NAIC) Code: 488320

Generator State ID # (if applicable):

90733

Yes ___ No

Please check if generator has "No Canada Disposal" policy

Yes X No

Please check if generator has "No Landfill" policy

Yes X No

CUSTOMER INFORMATION:

Customer #: 1100021863Customer Name: GB Sales and ConsultingCustomer Address: 14303 Hartshill DrCity: Houston State: TX Zip: 77044Contact Name: Greg BowmanCustomer Phone: 713-419-6076

Customer Fax:

Customer Email: gallenb1963@gmail.comCustomer Service/Sales Rep: Ure / Bazarsky

B. WASTE STREAM INFORMATION:

Generator's Waste Name: Chloroform WasteOriginal Process Generating Waste: Discarding barge / tank heels

Is this waste exempt from RCRA regulation?

Yes ___ No X

If "yes" explain or cite regulation on continuation (Example HHW, CESQG):

Current method of disposal:

Is this waste from a CERCLA cleanup site?

Yes ___ No XWaste determination was made by: ___ Testing X Generator Knowledge X MSDS ___ Sample ___ Other

(Attach analytical, MSDS, or other supporting documentation used for waste determination)

Does the Waste have any of the following characteristics?

Yes (if yes check all that apply) ___ No X

<input type="checkbox"/> Oxidizer	<input type="checkbox"/> Dioxin or Suspect	<input type="checkbox"/> Water Reactive	<input type="checkbox"/> Air Reactive	<input type="checkbox"/> Organic Peroxide
<input type="checkbox"/> Hexachrome	<input type="checkbox"/> Infectious Waste	<input type="checkbox"/> Radioactive	<input type="checkbox"/> Chelating Agent	<input type="checkbox"/> Lachrymator
<input type="checkbox"/> Explosive	<input type="checkbox"/> Shock Sensitive	<input type="checkbox"/> Polymerizer	<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Inhalation Hazard, Zone

C. GENERAL CHARACTERISTICS:

Color: colorless

Physical state @ 70 F

Phases

BTU/lb

pH

Odor: <u>sweet</u>	100 % liquid	<input type="checkbox"/> aerosol	<u>X</u> single layer	<3000(Ex: water)	<2 (Acid)	10.0-12.5
<input type="checkbox"/> None	% solid	<input type="checkbox"/> powder	<input type="checkbox"/> double layer	3,000-5,000	2.0-4.0	>12.5 (Base)
<u>X</u> Mild	% sludge	<input type="checkbox"/> other	<input type="checkbox"/> >2 layers	<u>X</u> 5,000-10,000	<u>X</u> 4.0-10.0	
<input type="checkbox"/> Strong	% debris	<input type="checkbox"/> how many?	<input type="checkbox"/> >10,000 (Ex: oil)			

Liquid Flashpoint: ☐ <73 F ☐ 73 to 99 F ☐ 100 to 139 F ☐ 140 to 200 F ☐ >200 F X NoneBoiling Point _____ Specific Gravity: 1.464 Total Halogens: _____ % Total Organic Carbon (TOC): _____ % Viscosity: _____

D. CHEMICAL COMPOSITION: Total of Maximum concentration must be > or = to 100%.

Constituents	Min%	Max%	ppm	Constituents	Min%	Max%	ppm
Chloroform	95	100	%				
Water	0	5	%				
Dirt and Rust	0	.5	%				

Does the Waste contain any of the following?

Metal Pieces: ___ Yes X No

If yes, Describe Metal:

Nitrocellulose: ___ Yes X NoMetal Powder or Flake: ___ Yes X NoSharps: ___ Yes X NoIsocyanates: ___ Yes X NoAsbestos: (If yes, must be double bagged and wetted) ___ Yes X NoReactive cyanide: (If yes, indicate level in ppm) ___ Yes X No

Range of reactive cyanide

Reactive sulfide: (If yes, indicate level in ppm) ___ Yes X No

Range of reactive sulfide

PCBs: X None ___ 0-49 ppm ___ 50-499 ppm ___ 500+ ppm (If waste contains PCBs, certification form is required)

Does the waste contain Benzene?

Yes ___ No X

If yes, check all SIC codes that cover operations at your facility

Yes X No

2812	2813	2816	2819	2821	2822	2823	2824	2833	2834	2835	2836	2841	2842	2843	2844	2851	2861
2865	2869	2873	2874	2875	2879	2891	2892	2893	2896	2899	2911	2999	3312	4953	4959	9511	

If waste contains benzene and falls under one of the above SIC codes, Tradebe's benzene NESHAP form is required for each shipment

WASTE WATER ANALYSIS

For waste streams being managed through United's wastewater treatment operations only:

Profile # _____

Phases: Oil _____ % Water _____ % Interface _____ % Sediments _____ % DNAPL _____ %								
Petroleum Phase	Suspected Level	Actual Level	Aqueous Phase	Suspected Level	Actual Level	Aqueous Phase	Suspected Level	Actual Level
PCB			Copper			Cobalt		
Halogens			Cadmium			Mercury		
Solvents			Chromium			Arsenic		
Arsenic			Lead			Barium		
Cadmium			Nickel			Sulfides		
Chromium			Silver			Cyanides		
Lead			Zinc			Phenols		
			COD			Glycols		
			Iron			Selenium		

List Specific Solvents: _____

E. OTHER WASTE STREAM INFORMATION:Is this waste a USED OIL per 40CFR PART 279? _____ Yes ☒ No

If Yes, does the total halogen content exceed 1,000 ppm? _____ Yes _____ No

If Yes, can you identify the Chlorinated Constituent present in the oil? _____ Yes _____ No

If Yes, can you rebut the presumption that this material is a Hazardous Waste? _____ Yes _____ No

Is the Waste subject to RCRA 40 CFR Subpart CC controls (Are Volatile Organic Compounds >500ppmw)? ☒ Yes _____ NoDoes the Waste contain any Class I or Class II ozone-depleting substances? _____ Yes ☒ NoDoes waste contain EPCRA 313 chemicals identified in 40 CFR 372.65? _____ Yes ☒ No

If yes list in Additional Information on Continuation Page.

Does this waste contain any Chemicals of Interest listed in 6 CFR Part 27 Appendix A (Department of Homeland Security)? If yes please list in Additional Information on Continuation Page. _____ Yes _____ No

F. RCRA CHARACTERIZATION:Is this a USEPA Hazardous Waste as defined in 40 CFR 261.3? ☒ Yes _____ NoIs this a Universal Waste per 40 CFR part 273? _____ Yes ☒ No

Please list any characteristic codes (D001-D043): D040

Does the waste contain UHCs above treatment standards levels? (40 CFR 268.48, 268.7) _____ Yes ☒ No

If yes identify those chemicals in Appendix I - Underlying Hazardous Constituents

Please list any applicable "F" or "K" codes: N/A

Please list any applicable "U" or "P" codes: N/A

Please list any state regulated codes: _____

0006204H

G. SHIPPING VOLUME & FREQUENCY:

_____ Bulk Liquid (tanker) _____ Approximately how many gallons?

_____ Cubic Yard Boxes ☒ Totes 275 size in gallons _____ Metal ☒ Plastic Bulk Solids (roll-off box, vacuum box, etc)

_____ Skid _____ Other If other, please describe: _____

_____ Drums (Specify size) 85 55 30 15 5 _____ Metal _____ Plastic _____ Fiberboard

Is waste a combination package (e.g. Drum with inner containers or skid with cases of consumer products) _____ Yes _____ No

Shipping Frequency: Number of Units 12-14 Per _____ Month _____ Quarter ☒ Year _____ Other _____**H. DOT SHIPPING INFORMATION**Is this a U.S. Department of Transportation (USDOT) Hazardous Material? ☒ Yes _____ No

Shipping Name per 49 CFR 172.101 Hazardous Materials Table: _____

UN1710, Hazardous Waste Liquid, N.O.S., (Chloroform), Class 6.1, PG III

Hazard Class or Division: 6.1 UN/NA #: UN1710 Packing Group: _____ I _____ II ☒ III ERG #: _____

Technical descriptors if required: _____

DOT Special Permit that may apply (Include copy of permit): _____

RQ if required: _____

Inhalation Hazard: Zone _____

I. GENERATOR CERTIFICATION:

I agree by affixing my authorized signature that I hereby certify that the above and attached description is complete and accurate and that no omissions of characteristics, composition or properties exist and that all known or suspected hazards have been disclosed. I also certify that each sample provided to Tradebe is representative of the waste material described above and give Tradebe permission and consent to make amendments and corrections and that I am an authorized agent of the Generator.

Name(print): _____

Signature: _____

Title: _____

Date: _____

INTERNAL USE ONLY: Please indicate which Tradebe Facility(s) are being utilized for this Profile

_____ TTR, LLC, East Chicago, IN

_____ TTR of TN, LLC, Millington, TN

_____ United Oil Recovery, Inc Meriden, CT

_____ Bridgeport United Recycling Bridgeport, CT

_____ United Oil Recovery, Inc Newington, NH

_____ ECC Stoughton, MA

_____ Zecco Northboro, MA

_____ Norlite Corp Cohoes, NY



Waste Stream Profile Approval Letter

June 17, 2015

Greg Bowman
GB Sales & Consulting LLC
14303 Hartshill Dr
Houston TX 77044

Dear Greg Bowman

Tradebe Environmental Services wishes to inform you that the waste stream profile(s) below has been approved for shipment into Tradebe Treatment and Recycling, LLC located in East Chicago, IN & Millington, TN

Profile Number: 1000100012
Profile Name: Chloroform waste
Generator Name: Tubal Cain
8700A Old Yacht Club Road, Port Arthur, TX 77642

DOT Description: NA3082 HAZARDOUS WASTE, LIQUID, N.O.S. (Chloroform) 9 III RQ(D022)

Waste Codes: D002;D022

HA Management Code: H061

Process Code: VA

Special Requirements:

Terms:

In accordance with 40 CFR 264.12 "Required Notice" and State(s) equivalent regulations, Tradebe Environmental Services, LLC is informing the waste Generator that East Chicago, IN & Millington, TN has the appropriate permit(s) for the above listed waste stream and will accept the waste stream as described by the Generator/Broker, including but not limited to the certification in the Generator's Waste Stream Profile Submittal Report. This waste stream profile approval was founded on the information that the Generator/Broker provided pursuant to the Generator's compliance with 40 CFR 262.11 "Hazardous Waste Determination" and/or their States regulatory equivalent. If at any time the waste is found to contain constituents, properties, or concentrations inconsistent with the information supplied by the Generator/Broker, title to such waste shall not pass to Tradebe Environmental Services, LLC and in addition to a Rejection, you shall be liable for all direct, indirect, and consequential damages incurred by Tradebe Environmental Services, LLC as a result of the non-conforming waste. Tradebe Environmental Services, LLC reserves the right, in its sole discretion, to utilize processes within RCRA environmental standards alternate to the process code stated above to process the waste listed on this approval letter.

To facilitate the expedited receipt and processing of the above waste, Tradebe Environmental Services, LLC requires that the above listed Waste Stream Number appear on each shipping document (Block 14 on the Uniform Hazardous Waste Manifest, Block 13 on the Nonhazardous Waste Manifest, or Description of Articles on a Bill of Lading).

Please contact our Customer Service Department at

to schedule or if you have any questions or comments regarding your waste stream.

Thank you for the opportunity to serve your environmental needs.

Sincerely,

Tita LaGrimas

Tita LaGrimas, Executive Vice President of Regulatory Affairs